

## **Topic: NFDRS calculations when fuels are covered with snow**

Several units operate their Remote Automated Weather Stations and calculate NFDRS indices yearlong, even when there is snow covering the fuels. Many feel that it gives them a better feel for the fuel moisture in the larger fuels, as they emerge from the winter snow cover that can benefit the timing of spring prescribed burns. This is a local call.

The standard NFDRS calculation of Equilibrium Moisture Content is keyed to the ambient air temperature and relative humidity. In the winter and early spring fuels are covered with snow that insulates them from the effects of the ambient air conditions. The moisture content of snow covered fuels respond as if the fuels are in a near saturated environment with 100% RH around the clock. **To make sure that the NFDRS model reflects this condition you must set the Fuels Wet Flag to YES whenever your fuels are covered with snow, regardless of the observed State of Weather that day.**

Later, when thawing occurs, an additional calculation must be made to ensure that the appropriate adjustments to heavy fuel moisture values are being made within the NFDRS model to reflect the affect of the free water that has been released by the thawing process. The original NFDRS code did not consider this.

**In the winter of '05-'06, the following modification was made to the NFDRS code to accommodate those situations where there is snowmelt occurring which affects the 100-hr TL FMC and 1000-hr TL FMC values.**

**Thawing most likely occurs when the observed State of Weather is 0, 1, 2, 3, 4 or 9. Even though no precipitation may be occurring, the fuels are being subjected to the wetting influence of the thawing snow. In these situations make sure that you enter the Fuels Wet Flag as YES regardless of whether there is measured precipitation or not.** The combinations of these States of Weather and Fuels Wet Flag being yes will automatically trigger a thawing algorithm within the NFDRS model. The assumed duration of the thaw is a function of the air temperature (The higher the air temperature, the greater the thaw duration). This adjustment will gradually increase the 100-hr TL FMC and the 1000-hr TL FMC. **Continue to set the Fuels Wet Flag at YES until the fuels are no longer buried under the snow. For those with fuel temperature sensors on their Automated Weather Stations, this can be detected when the fuel temperature starts responding to the ambient air temperature changes. (When the sensors are covered with snow, they usually read a constant 28-30 degrees around the clock.)**

**From a day to day operational standpoint, you should always be setting the Fuels Wet Flag to YES any time the fuels are covered with snow, regardless of the observed State of Weather.**